



PhD Project Title: The in-vitro risk stratification of endothelial-specific immune reactions post allogeneic haematopoietic stem cell transplantation.

A PhD position is now available in Systems Biology Ireland, University College Dublin, to investigate adverse cellular immune reactions against the vascular endothelium

Location: Systems Biology Ireland, University College Dublin, Dublin, Republic of Ireland

Supervisors: Prof Günther Eissner PhD, Prof Owen Smith MD PhD

Project Background & Description:

Systems Biology Ireland (SBI, <http://www.ucd.ie/sbi/>) established in 2009 under SFI's CSET initiative, has successfully developed an integrated mathematical modelling and experimental research programme focusing on the design of new diagnostic and therapeutic approaches to diseases, primarily cancer, based on a systems level, mechanistic understanding of cellular signal transduction networks. To accomplish these goals, SBI uses mathematical and computational modelling approaches in combination with cutting edge experimental technologies in proteomics, genomics, advanced microscopy and flow cytometry as well as cell biology and molecular biology methods. SBI's expertise, particularly in the area of modelling in systems pharmacology and therapeutics, strategically position it at the crossroads between biology and medicine.

The purpose-built SBI facility, supported by the HEA's PRTL15 programmes sits in the space between the UCD Conway Institute and the Health Sciences Centre (School of Medicine and Medical Sciences). It is physically linked to both buildings, providing access to existing technology platforms, educational and conference facilities and ideally placed to train allied healthcare professionals. The facility houses a multidisciplinary team of some 50 researchers including bioinformaticians, statisticians, computational scientists and modellers, engineers, biologists, biochemists and physicists.

This PhD student post will be part of a team working on an in vitro monitoring of endothelial-specific T cell reactions and ways to protect against them. This study is funded through the National Children's Research Centre. The project will generate patient-specific endothelial cell lines by ex vivo differentiation and immortalisation of bone marrow-derived mesenchymal stem cells (eMSC). These eMSC will be phenotypically and functionally characterised and used for the in vitro detection of cytotoxic T lymphocytes specifically targeting endothelial cells. The mechanism of differentiation will also be investigated at the systems level to optimise the differentiation product.

The student will gain valuable knowledge in the –omics analysis of cellular differentiation and in transplant immunology as well as in standard methods used in molecular and cell biology.

Person Specification:

We are looking for a highly motivated, passionate PhD candidate with the ability to independently plan and conduct the research project while integrating into an interdisciplinary research environment. Applicants should have, or expect to obtain, a first or upper second class honours Bachelors or Masters degree in Biology, Biochemistry, Systems Biology, Chemistry or related fields. Excellent analytical and communication skills are preferable.

Stipend: The successful candidate will receive a tax-free stipend of €18,500 per annum. The position is funded for three years.

Application procedure: Please send a CV and accompanying documentation including references to Prof Günther Eissner (Systems Biology Ireland). Email address: guenther.eissner@ucd.ie

Closing date: Applications should be received by May 31, 2018.

Web:

The University:	http://www.ucd.ie/aboutucd.htm
The College of Health Sciences:	http://www.ucd.ie/chs/
The School of Medicine and Medical Sciences:	http://www.ucd.ie/medicine/
Systems Biology Ireland:	http://www.ucd.ie/sbi/

Relevant publications:

Cahill EF, Sax T, Hartmann I, Haffner S, Holler E, Holler B, Huss R, Günther C, Parolini O, Kolch W, Eissner G: Mesenchymal stromal cells protect endothelial cells from cytotoxic T lymphocyte induced lysis. *Scand J Immunol* 84: 158-164, 2016

Eissner G, Hartmann I, Kesikli A, Holler E, Haffner S, Sax T, Schray C, Meiser B, Reichart B: CD4+CD25+FoxP3+ regulatory T-Cells enhance the allogeneic activity of endothelial-specific CD8+CD28- cytotoxic T lymphocytes. *Int Immunol* 23:485-492, 2011

Hartmann I, Hollweck T, Haffner S, Krebs M, Meiser B, Reichart B, Eissner G: Umbilical cord tissue-derived mesenchymal stem cells grow best under GMP-compliant culture conditions and maintain their phenotypic and functional properties. *J Immunol Meth* 363:80-89, 2010